

DOCUMENT RESUME

ED 255 203

IR 011 575

TITLE Videotex and the Personal Computer.
INSTITUTION Department of External Affairs, Ottawa (Ontario).
PUB DATE [May 84]
NOTE 47p.; For related documents, see IR 011 573-576.
Color graphics may not reproduce well.
PUB TYPE Information Analyses (070) -- Reports - Descriptive
(141)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Computer Graphics; *Computer Software; *Display
Systems; Foreign Countries; Information Networks;
*Input Output Devices; *Microcomputers; Programing
(Broadcast); Standards; *Videotex
IDENTIFIERS *Canada; Telidon System

ABSTRACT

Some of the major trends in the merging of videotex and personal computer technology are outlined in this promotional brochure, one of 10 in a series on videotex, a system which uses standard transmission links to transmit information in text and graphics to a television set or computer monitor. Topics addressed include the NAPLPS standard (North American Presentation Level Protocol Syntax), known as Telidon in Canada; graphics capabilities; hardware components and computer software that can convert microcomputers into Telidon-NAPLPS terminals; and page creation applications. Specific software packages that give microcomputers Telidon-NAPLPS capacity are described, focusing on those of the following Canadian companies: Avcor, Cableshare, Formic, Microstar Software, Microtaure, Network Videotex Systems, Norpak, and Tayson. It is concluded that developments linking the personal computer with NAPLPS systems are proceeding at a dramatic pace. (LMM)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

ED233203

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

- ☐ This document has been reproduced as received from the person or organization originating it.
- ☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

VIDEOTEX AND THE PERSONAL COMPUTER



The personal computer is turning out to be one of the most powerful tools of the eighties. As a problem solver, number cruncher, master of a thousand chores and as an extension of the human mind itself, it is finding application in virtually every facet of human life.

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

Brian Casey

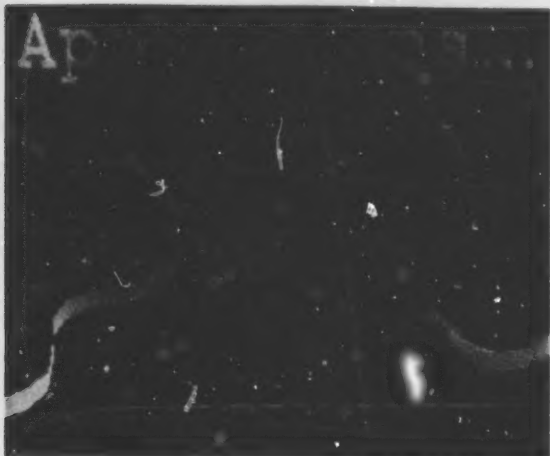
TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

IR011575

**NO ONE SAID THE JUNGLE
WOULD BE EASY**

But not all PCs are created equal. Such is the competitive world of the personal computer that manufacturers, suppliers, and software publishers are all looking for the feature, the capability that gives the edge of their particular product over the rest of the pack. Survival, in this game, depends on it. The survivors will be the ones which offer the most in terms of capability, flexibility, and price performance. And that is as true for the system as it is for the software.



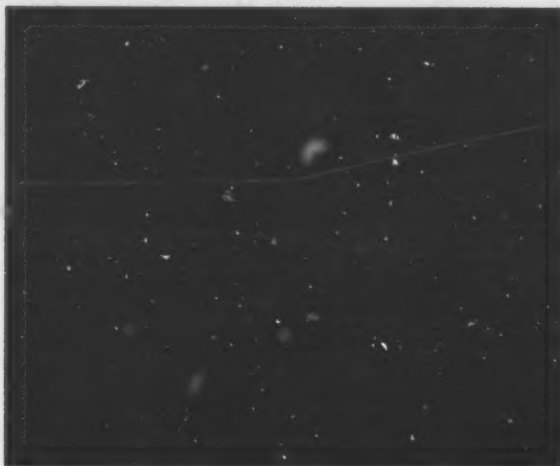


VIDEOTEX - THE RACE IS ON

A new technology which unleashes a vast potential for the personal computer is now here. So valuable is its potential, that personal computer giants such as IBM and Apple have moved quickly to offer it. So vast is its promise, that some are calling it a brand new medium, unlike print, TV or even traditional computer communications. Communications leaders such as AT&T, CBS, the Times Mirror Group, Infomart and others are pouring millions of dollars into developing its potential.

It's called videotex. Already, it is a growing force in today's computer communications marketplace. Many observers feel that videotex is at the same take-off point where personal computers were four years ago, and that before the end of the decade, it will have become an integral part of business, institutional and home systems. Hardware or software suppliers which fail to find themselves in the videotex running — and quickly — could well find themselves out of the race. For good.

This brochure outlines some of the major trends in the merging of videotex and personal computer technologies.





VIDEOTEX – UNLEASHING THE POTENTIAL OF THE PERSONAL COMPUTER

Videotex is a remarkably powerful, flexible and, above all, inexpensive new technology that is changing the face of the whole computer communications industry. *And now, it is transforming the capability and range of the personal computer.*



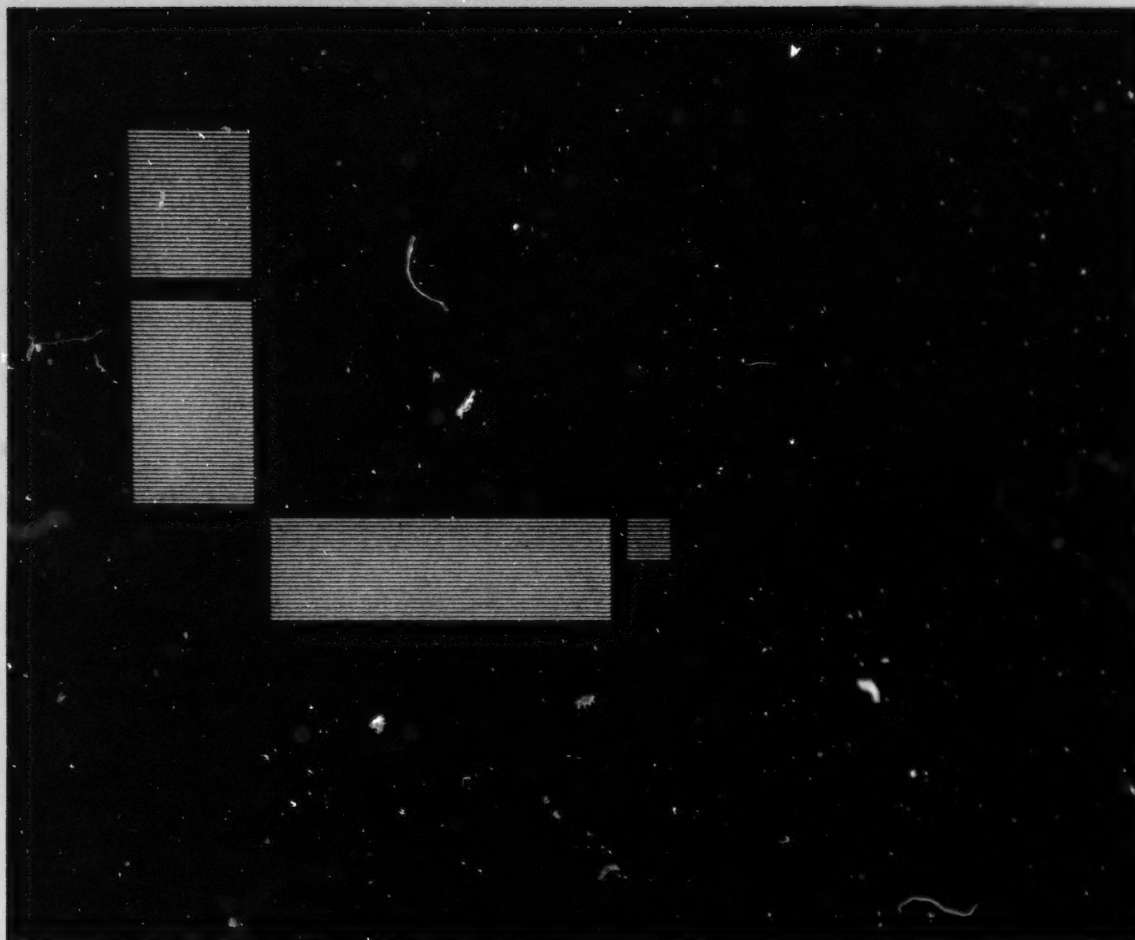
WHAT IS VIDEOTEX?

Essentially, videotex is a protocol for creating, storing, transmitting and retrieving computer text and graphics. Videotex uses standard transmission links to transmit information, in both text and stunning colour graphics to a television set or computer monitor. With videotex, a user can retrieve any one of thousands of "pages" of data at the punch of a few keys, from data banks next door or half a planet away. Data is sent by telephone, cable, or satellite — it makes no difference, technically, which — and is displayed at the user's command on a terminal, which can be either a personal computer or a slightly modified home TV set, with a decoder attached.



In North America and many other parts of the world, the accepted videotex standard is known as NAPLPS. The NAPLPS standard, based on technology developed in Canada, is known in Canada as Telidon.

The North American standard for videotex, NAPLPS, is destined to become the graphics and text communications protocol for a vast majority of applications, replacing text-and-number-only codes such as ASCII in applications where graphics are required, just as colour TV transmission standards replaced black and white about 20 years ago. Moreover, the designers of Telidon — NAPLPS have incorporated the standard ASCII coding system as part of the protocol, so that letters and numbers respect the ASCII convention. And hardware that can handle ASCII characters (modems, phone lines, TV cables, local networks) can also handle NAPLPS pictures.



A NEW ART FORM?

The graphics capability of the NAPLPS videotex standard is awesome. Full colour, stunning creations that elevate computer graphics to a new art form are not only possible to create, but easy and inexpensive to execute, store and transmit. Even blinking, highlighting and sophisticated animation are possible, increasing the inherent capability of an already powerful communications medium. It has been compared to alphanumeric (text and number) protocols as colour TV is to the Gutenberg Bible.

A NEW MEDIUM OF HUMAN COMMUNICATION

Videotex opens up the possibility of a vast array of exciting services: electronic mail, the electronic newspaper, shopping and banking at home, education, entertainment, specialized information services, and thousands of special-purpose applications. The list ends at the frontier of imagination itself.

And the usefulness of videotex is not limited to the transmission and reception of graphics and text over distances. The same technology, and its inherent advantages — low cost, ease of use, and superb colour graphics — make it ideal for a myriad of stand-alone applications.

VIDEOTEX: POISED FOR LIFT-OFF

Hundreds of companies, including some of the biggest players in the communications and publishing industries — AT&T, CBS, the Times Mirror Group and many others — have already embraced the NAPLPS videotex standard and have begun or are planning major new commercial initiatives based on the technology. Examples:

- The Times Mirror Group of Los Angeles operates the most comprehensive videotex project in the United States, providing information to hundreds of homes in the Los Angeles and Orange County areas of California as a prelude to full-scale commercial services in 1984.
- Viewtron, a full commercial videotex service, went on-line in October 1983 in South Florida. Knight Ridder, the newspaper chain which offers the service, plans rapid expansion to other market areas.
- Commercial Telidon service in Manitoba, Canada, providing information to the farming and agribusiness communities, has been in operation for two years under the name "Grassroots" and is expanding to other areas.

The system, operated by Infomart, provides up-to-the-minute information on commodity prices, markets, weather, financial information and a host of other services on terminals by Electrohome.

- Key Com, a partnership of Honeywell and Field Publishing, is inaugurating Chicago's first major videotex service in 1984.
- Major banks such as ADP and its home banking interchange, CitiBank, as well as the Bank of Montreal are actively planning to introduce bank at home services using NAPLPS systems. Initial trials are already underway.

NAPLPS - AN ENCODING SCROOGE

The excitement surrounding NAPLPS is due in part to the remarkable way it encodes colour graphic information. The designers of the protocol, recognizing that local memory and processing power has now become cheaper, thanks to the chip and the microcomputer, turned their attention to a deficiency inherent in other videotex and graphic coding systems: they all were voracious consumers of storage and transmission capacities. As a result, transmission and storage costs tended to make them unsuitable for many applications. The NAPLPS protocol, by contrast, uses what are known as Picture Description Instructions (PDIs), a notably Spartan encoding method. A line, for example, requires only three instructions: the beginning and end co-ordinates and a command to join. The savings, both in transmission and storage requirements, over protocols which require every pixel to be identified are astounding.



THE FUTURE OF GRAPHICS RESOLVED

What's more, the graphics produced by NAPLPS are independent of the display medium. On a low-resolution display, they will of course show the "staircase" result characteristic of low-resolution terminals. But displayed on a high-resolution monitor, the same graphics become as flawless and as stunning as the monitor allows. There is an important aspect to this feature that those organizations who have embraced the NAPLPS protocol already realize. Information formatted according to the NAPLPS protocol today will never — never — become obsolete because of future changes in display technology and resolution. *The coding protocol is completely independent of any display technology.* So NAPLPS improves as display resolution advances.

Whatever improvements come down the pipeline, such as digital TV, for example, NAPLPS will always be able to display its creations to the limit of the display medium itself. In a world where obsolescence seems to be the only constant, NAPLPS already has a solid foothold on the future, no matter what direction the technology may take.

ONE SINGLE, ELEGANT STANDARD

Nothing is more frustrating and discouraging to the personal computer user than the tangle of incompatible computer standards, systems and protocols that currently chokes the marketplace. And nothing could be more significant, and of greater value to the user than a single, standardized system for videotex technology such as NAPLPS. The North American Presentation Level Protocol Syntax (NAPLPS) has emerged as the videotex standard for North America, the Far East and other areas of the planet. And NAPLPS, in turn, forms part of the world standard for videotex, ratified in 1980 by the CCITT, the international telecommunications

standards organization. It matters not what system or software a particular service is created on. All personal computers running with NAPLPS will be able to interact with the North American videotex protocol and retrieve data formatted in the NAPLPS standard. So the chaos of competing standards in most areas of computer technology — and the lack of compatibility — has already given way to one standard: a simple, elegant solution to an otherwise unsolvable problem.

PUBLISHING IS GOING ELECTRONIC



Current estimates show that there are more than 2,000 publicly available databases in the United States and another 500 in Canada. These range from special-purpose databases serving the law, health or scientific communities, to the large general purpose databases such as The Source, CompuServe, the New York Times, Dow Jones News/Retrieval and many others. Estimates are that there will be a 20 per cent growth rate in the number of publicly accessible data banks at least until 1990. The rise of electronic publishing is unmistakable.

ELECTRONIC PUBLISHING IS GOING 'NAPLPS'

While the majority of databases currently operate under the ASCII or similar alpha-numeric protocols, many of the newer public databases are planning for combined text and graphic capability, and many existing text-only bases are planning to convert. The writing, or should we say the graphic, is on the wall. For many purposes, the use of graphics is an indispensable way to organize and display data meaningfully, or to quickly indicate trends. Graphics communications for business purposes is one of the hottest industry trends today, and it's not difficult to see why.

MORE THAN JUST A PRETTY FACE

But graphics are more than just a simple tool to organize data colourfully. As humans, we rely on visual data in the real world to convey and make sense of most of the information we receive. Any computer medium which disregards this fact cannot achieve its potential. The general public's experience with and demand for high quality graphic communications, spawned by the popular video arcade games, is maturing. And graphics will be the key to extension of database use from specialized or business clients, the mainstay of today's computer communications applications, to a more widespread general public use. Futurists point out that, given the costs and distribution problems inherent in conventional publishing and information dissemination techniques, it's only a matter of time before electronic publishing — with all that implies — comes to the living room. Widespread electronic publishing without the use of high-quality graphics is inconceivable.



Indeed, text and graphic electronic publishing in its embryonic form is among us now. Large retail outlets are exploring the use of Telidon - NAPLPS systems to introduce shop-at-home services, complete with full visual representations of sale items. Developments in electronic newspapers and electronic magazines indicate that text and graphic combinations not only have more appeal but convey information more meaningfully than text-only material.

Systems using Telidon - NAPLPS protocols can be far more effective in conveying information graphically than a system which relies on pages of figures or piles of computer printout

sheets. That may have been the way to present information in the past, when users tended to be well versed in computer techniques and conventions. But today's personal computer user is more than likely to be a non-expert who does not understand programming and who does not relate to reams of computer data or complex log on, password and retrieval instructions. With this new generation of computer user, software and database managers are increasingly finding that user friendliness is the key to success.

THE TERMINAL - DESIGNED FOR THE AVERAGE GUY

The simplicity and elegance of the Telidon - NAPLPS protocol spills into the design of the Canadian-made Telidon systems and interface. Telidon decoders, which allow users to access information banks, are as simple to use as a touch-tone telephone, and are often seen at exhibitions, displays and other areas where first-time users by the hundreds - young, old, experienced or neophyte - become instant experts. Most interactive systems designed for public use are menu-driven, where every instruction is carefully given on the screen itself.

Telidon - NAPLPS information may be accessed through traditional tree-structured databases, keyword searches, or even the more powerful user profile techniques - in short, the protocol inflicts no restrictions on database and retrieval architecture. And the hardware and software developments which are transforming the personal computer into Telidon - NAPLPS terminals incorporate the same simplicity and ease of use.



A QUICKLY MATURING TECHNOLOGY

Videotex is an embryonic concept that is growing fast. The North American standard first saw the light of day a scant five years ago in the laboratories of the Department of Communications, a Canadian government department which undertakes a broad range of high technology communications research. In 1978 it announced the invention of Telidon, a radically new way to create, store and transmit computerized text and graphic information. The U.S. communications giant, AT&T, quickly recognizing the potential of Telidon as a computer communications medium, adopted the major features of the Telidon protocol and within three years — by 1981 — the technology had been refined and adopted as the North American standard. The original Telidon



protocol was also upgraded so that now, Telidon and NAPLPS are identical. Since then, growth has been dramatic. Telidon - NAPLPS information banks have sprouted up around the continent. Businesses have begun using Telidon technology for a myriad of purposes. Some are simple uses, such as timely and informative internal communications, or the creation of blockbuster audio-visual presentations, briefing aids, or training programs, or as a powerful sales and marketing medium. Major publishing, communications, financial and retail giants are moving swiftly into Telidon - NAPLPS testing and are beginning commercial, to-the-living-room services. It has spread to the educational milieu where boards of education, universities, colleges and educational TV networks are experimenting with the medium and introducing services. TV Ontario, a progressive educational television network, has been using the broadcast version of Telidon, teletext, since 1980.



CANADA - SECOND TO NONE

It is not surprising that most of the leading-edge developments in Telidon - NAPLPS technology, software and applications are coming from Canadian companies. Telidon, after all, was born in an Ottawa, Canada, research laboratory five years ago and the government, recognizing the enormous potential of the medium, has helped to create an environment since then which is spurring developments on all fronts. Not only has the Canadian government promoted refinements to the technology itself, but has provided seed funds for conducting videotex and teletext trials across the country during the past three years. These are operating videotex systems and services, some already on a commercial basis, and include applications in education, business, retail, banking, real estate, law, agriculture, government, entertainment, health, public relations, marketing and many more. The result has been a tremendous amount of experience with the medium in a remarkably short time. It has given companies and organizations in Canada more hands-on experience with and working knowledge of Telidon - NAPLPS than in any other nation, has created an enviable reservoir of expertise with the new technology, and has placed Canada in the fore-



front of world-wide videotex developments.

The Canadian superiority in videotex did not occur out of the blue. Canada and Canadian companies have, over the years, built an outstanding reputation in many fields of high technology and computer communications including data networks, transmission media, cable TV, communications satellites, and fibre optics. So when Telidon - NAPLPS emerged, it did so from a solid foundation of computer communications expertise and talent in the Canadian private sector.

NAPLPS AND THE PERSONAL COMPUTER



At the outset, it appeared as though videotex and personal computer developments were evolving along separate courses. Early videotex equipment and terminals were dedicated machines, performing functions related only to the videotex medium. And there will always be the need, in many applications, for videotex-only terminals. More recently, however, there have been a series of dramatic developments which are merging the technologies of videotex with the personal computer.

THE PERSONAL COMPUTER AS TELIDON TERMINAL

It began when the larger personal computer and component manufacturers started developing and offering hardware components which would allow personal computers to run NAPLPS videotex services. Telidon boards now exist for the Apple, the IBM PC and Commodore, and others are under development for the most popular models. These convert personal computers into Telidon - NAPLPS terminals.



With these boards, and appropriate software, the computer can retrieve any "page" of information in existing or planned videotex data banks, through a standard modem, just as a normal Telidon decoder does. And using standard peripherals, such as colour printers and plotters, hard-copy versions of the data can be generated. Even the production of 35 mm slides is possible through standard photographic peripherals. Alternatively, pages can be stored locally on the personal computer's own storage medium.



THE SOFTWARE REVOLUTION

More recently, some exciting software developments are adding to the capability of personal computers and NAPLPS. Not surprisingly, they come from Canadian companies; a result of Canada's head start with Telidon - NAPLPS systems.

THE PERSONAL COMPUTER - DECODED!

An Ottawa firm, Microstar Software, has devised a powerful software package which converts the IBM PC, Compaq, Columbia Data Products, Hyperion and IBM PC look-alikes into Telidon - NAPLPS terminals. For the growing numbers who already have made the plunge into personal computing, the Microstar route will be one of the simplest, and least expensive, means to climb on the Telidon bandwagon. The software is available on disk. The user needs a 128K system, colour card, monitor and modem.

Not only does the software allow users to access NAPLPS databases and display subsets, but these can be accessed through public gateway systems, such as iNet. It will even automatically sense when Telidon - NAPLPS protocols are being accessed and configure accordingly, alleviating the user from any complex set-up procedures. So the creators have managed to conserve one of the most fundamental aspects of Telidon accessing — ease of use and user friendliness. As Microstar describes it, "It's a neophyte's dream."

Through an arrangement with Infomart, the largest Canadian Telidon - NAPLPS information provider, purchasers of the Microstar package are given 10 free hours of access time to the vast Infomart databases.



A POWERHOUSE OF FOUR

Another Ottawa company, Microtaure Ltd., has developed some highly sophisticated — and highly successful — software which it calls "Teligraph". The Microtaure Teligraph system incorporates four powerful programs which, together, recast the personal computer into a Telidon - NAPLPS page creation system.

The first program allows the PC to retrieve pages from Telidon databases and either display them, pump them through to outputs such as colour printers or photographic units, or store them on disk by page or by groups for later processing and use. The second provides a full Telidon - NAPLPS page creation capacity, using a two-screen system. One screen provides codes and instructions, the second provides the "canvas" on which the Telidon text and graphics are created. With a third program, redefinable text becomes possible, allowing the use of non-Roman alphabets, symbols, ideographs and the like. And finally, a fourth program allows a user to assemble pages, which have either been retrieved from a central database or created on the spot, for dramatic audio-visual presentations.

The Microtaure package is configured for the IBM PC and requires a 16-bit machine with a minimum 256K RAM, both colour and monochrome screens, a colour card and modem.



THE PERSONAL COMPUTER AS PAGE CREATOR

Formic, an enterprising Quebec firm, has devised a unique series of software packages for the Apple computer and the IBM PC, which transforms these micros into full Telidon page creation systems. Traditionally, Telidon page creation systems, known in the trade as Information Provider Systems (IPS), have been dedicated graphics installations. The Formic interface unit, which runs at a fraction of the cost, represents a cost reduction dramatic enough to allow small firms, organizations or even individuals to enter the growing Telidon - NAPLPS page creation market. The units have raised considerable interest, since they now offer the opportunity for special-purpose databases to be created and networked at minimal cost. The page creation software, which resides on an ROM interface card instead of diskette, provides the capacity, flexibility and ease of use that, until now, was available only on dedicated special-purpose IPS equipment. The addition of hard disk storage allows the creation of a local, and sizeable, Telidon - NAPLPS information bank which can be retrieved by anyone with a decoder.

In addition to the page creation software, the company can also provide turnkey page creation systems and customized packages for special purpose Telidon - NAPLPS applications.



THE LINK TO THE LIVING ROOM

Avcor Ltd., a division of Southam Communications of Toronto, has recently brought out Telidon decoder software for the Commodore 64, opening the door to Telidon - NAPLPS service for these popular and inexpensive home computers. A similar package is to be available for the IBM PC. The transformation of the ubiquitous home computer into a Telidon - NAPLPS terminal removes one of the major obstacles to widespread consumer Telidon use — the cost of dedicated Telidon decoders. Now, with simple software, the home computer can read and display a subset of Telidon databases.



PICTURE PAINTER

Cableshare, a leading videotex software firm, has developed the most powerful micro-based page creation system. For a fraction of the cost of dedicated frame creation machines, the picture painter will do all the key page creations functions such as scaling, macro's, rotation, animation, colour palettes, reflection, multiple text fonts, etc.

NORPAK

If you need a production page creation machine go to world leader, Norpak. Their page creation machines have been proven as powerful production machines, and you should see the new products they are developing.

NETWORK VIDEOTEX SYSTEMS

Network Videotex Systems Inc. has developed a full (SRM) Telidon decoder on a board that fits into the IBM PC personal computer and its look-alikes. This standard NAPLPS decoder represents an important development in the move to merge the technologies of the personal computer and NAPLPS. It also solves many of the graphic limitations of the IBM PC. Network also has a software decoder for the Commodore 64 which displays subsets of, and is fully compatible with, the NAPLPS standard.

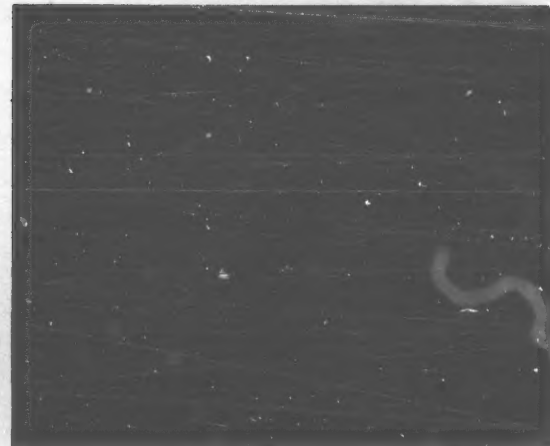




THE PERSONAL COMPUTER AS HOST DATABASE

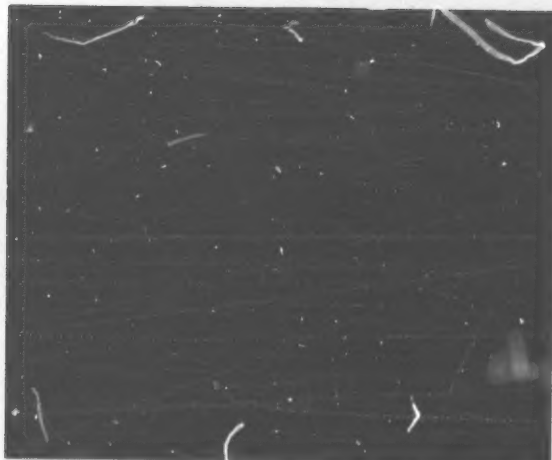
Now, the personal computer can function as an unattended host database as a result of software developed by Tayson Information Technology of Calgary, Alberta. With the Tayson package, the computer currently handles two users simultaneously (two RS 232 ports and modems are required) and a further enhancement allowing eight simultaneous users is on the way. Users access pages from a database stored by the computer. The software allows the design of a flexible database structure to meet the needs of users.

Designed to operate with the IBM PC, the software requires a minimum of 64 K of memory, and 128 K is recommended. The version allowing eight simultaneous users will require somewhat more memory. The software also allows Telidon - NAPLPS pages to be created or edited.



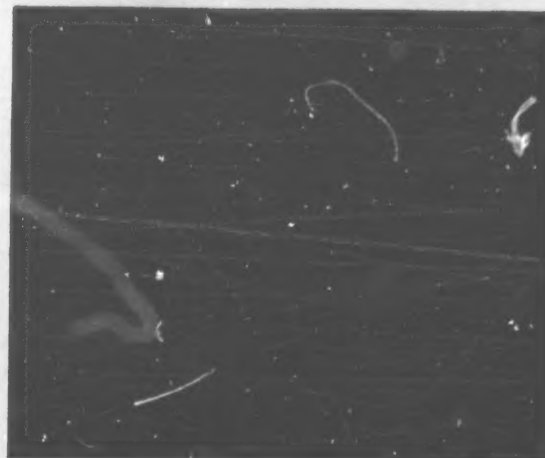
A DEVELOPING TREND

The foregoing examples indicate a growing trend which is extending the range of Telidon - NAPLPS applications and possibilities, while at the same time vastly increasing the potential of the personal computer. Perhaps most significant of all, yet of no surprise to those who are familiar with the NAPLPS concept, the information created on the personal computer systems conforms to the same standard as the hundreds of thousands of pages of information in NAPLPS data banks throughout North America.



ENDLESS APPLICATIONS

- Boards of education in the Province of Quebec are planning to use systems based on personal computers to provide up-to-the-minute information exchange among community colleges on a shared network.
- Small organizations such as community service groups now find it possible to become information providers — electronic publishers. As electronic publishing becomes more widespread and the penetration of Telidon - NAPLPS retrieval equipment continues, electronic publishing is emerging as an exciting alternative for small groups who need to communicate to a large audience and yet haven't the means to engage in costly printing and distribution activities.

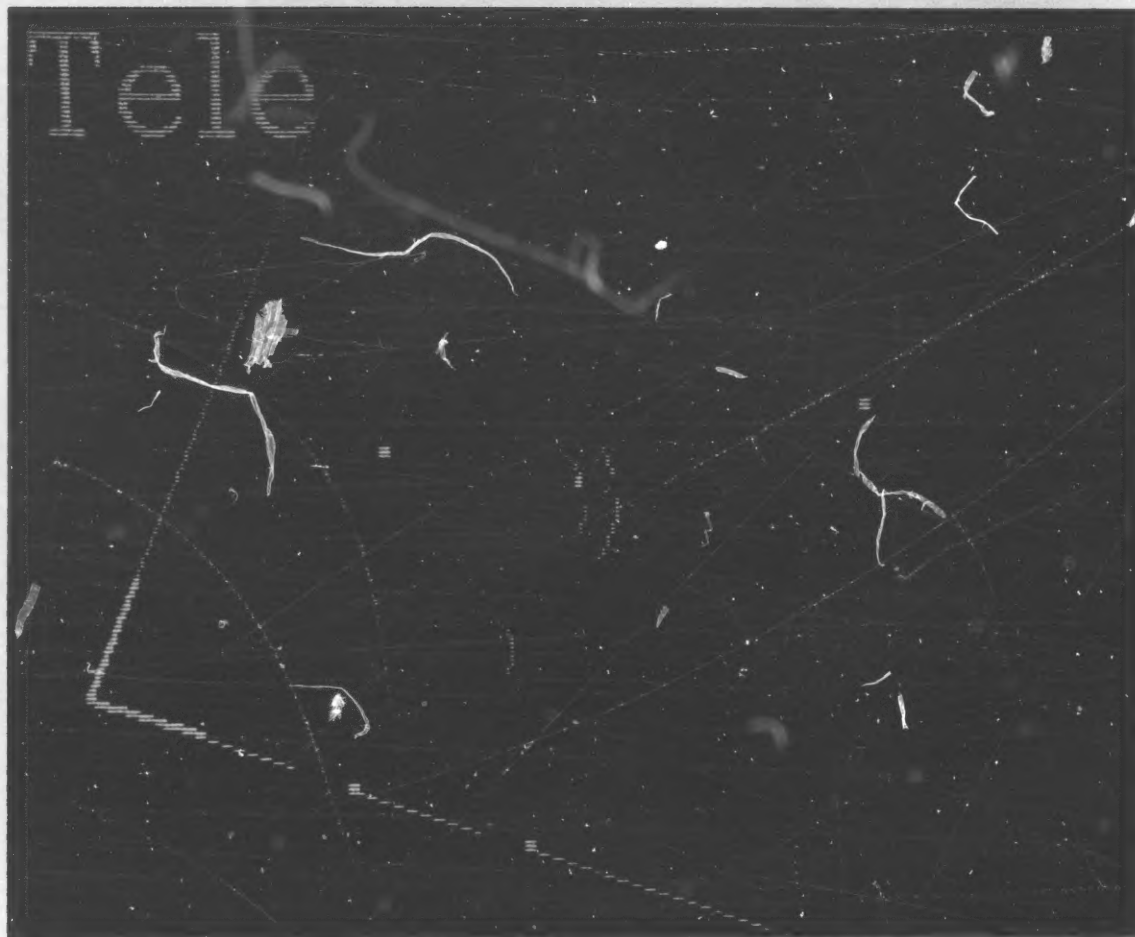


- Many organizations — large and small — have already replaced traditional 35 mm slide and sound presentations with impressive electronic productions for audio-visual briefings, training purposes, sales, presentations — anywhere where 35 mm slides were previously used. One advantage of Telidon - NAPLPS audio-visual presentations, aside from the spectacular way they communicate information, is that the altering and updating of material is simple and changes can be instantly incorporated.
- Telidon has proven to be an attention grabber at exhibitions, trade shows and displays where information in words and pictures has to be communicated effectively. Systems can be designed to operate automatically or interactively at the spectator's command.
- There is a tremendous growth in the use of electronic maps, charts and graphics by television broadcasters, cable outlets or TV program producers, particularly to enhance news and public affairs coverage and to provide special effects. The simple, inexpensive and easy-to-operate text and graphics capacities of Telidon - NAPLPS are proving to be a boon in these areas. And the fact that a whole range of graphic material can be created, stored or retrieved instantaneously fills the need for lightning speed in a field where deadline pressures are a fact of life.

TELESOFTWARE: THE LATEST TREND

The home consumer is not likely to invest the time or energy required to keep track of the rapid changes in software. And he or she is not likely to spend hundreds of dollars for a software package which will only see occasional use.

The key is to retail software via telephone or cable. The NAPLPS videotex standard, because of its Spartan coding protocol, makes downloading high-quality colour graphics and text easy and inexpensive. Small wonder that such companies as Videoway and Nabu Network are investigating the market for telesoftware. And software retailers are beginning to offer telephone-based telesoftware to deliver their products to consumers.



BRINGING IT ALL BACK HOME

Currently, about 90 per cent of Telidon - NAPLPS use is by the commercial, educational, government and institutional communities. And this roughly parallels the trend in personal computers generally, apart from the video game units. But Telidon - NAPLPS is destined to come home to the living room soon - and the way is already being paved by some of the largest retail, banking and service institutions

on the continent. They have seen the vast potential in shop-at-home and bank-at-home services and are actively planning - and in some cases have begun - major initiatives in these areas. Any home-based system for direct retailing will require sophisticated graphic and, in the future, even photographic capabilities. In applications such as electronic catalogue shopping for example, the customer has to see what he or she is getting. With the electronic newspaper or magazine, graphics will be an integral part of the package, just as they are in today's printed versions. (The Telidon protocol, with the use of digitized TV techniques, is capable of generating photographic as well as graphic images.)

Clearly, the rapid penetration of computers into living rooms across the country will hasten the widespread use of Telidon - NAPLPS in the home, particularly now that Canadian companies have developed the software which transforms the home computer into a Telidon - NAPLPS decoder.

THE CANADIAN CONNECTION

Developments linking the personal computer with NAPLPS systems are proceeding at a dramatic pace. Canadian companies such as Alphatec, Async, Ashdune, Avcor, Cablesare, Createx, Formic, Fulcrum Technologies, Limicon, Microstar, Microtaure, Network Videotex Systems, Softwords, Systemhouse and Tayson have packages that give the IBM PC, Apple II or IIe, Commodore 64 or other computer models, capacity in Telidon - NAPLPS. And by the time this brochure goes to print, a host of new services, systems, hardware and software offerings will likely be emerging. But one thing is clear. Most of the action is taking place in Canadian companies.

To explore the excitement and potential of this growing field further, write or call us today at the address below. We can provide more details or put you in touch with individual companies. But do it now. We're already receiving an overwhelming number of enquiries as the United States gears up to introduce commercial videotex services.

Contact:

Brian Casey
Telidon Marketing (TIS)
External Affairs
125 Sussex Drive
Ottawa, Ontario
CANADA K1A 0G2
(819) (819) 994-4445
(819) 994-4076

This is one of a series of 10 brochures covering various aspects of this exciting new technology.

Titles in the series include:

Videotex and the World of Business

Videotex and Banking

Videotex: New Tool for the Retailer

Videotex and the Personal Computer

Videotex and Cable TV

Videotex and Education

Videotex: New Tool for the Travel Industry

Videotex and Government

Videotex and Electronic Publishing

Videotex: A Thousand and One Applications

In addition, a Catalogue of Canadian Videotex Suppliers, is also available. These may be obtained through the contact above.